

ABSTRAK

EVALUASI KEBERHASILAN MATRIX ACIDIZING DAN PENENTUAN LIFE TIME SUMUR MENGGUNAKAN DECLINE CURVE ANALYSIS PADA SUMUR SYF-050 LAPANGAN NV

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Sumur SYF-050 adalah sumur minyak yang berproduksi pada lapisan W sejak Juli 2024 dengan OOIP sebesar 69 MMSTB di Formasi Talang Akar. Pada Desember 2024, produksi sumur ini mengalami penurunan hingga mencapai 32 BOPD. Apabila tidak dilakukan tindakan pencegahan, berdasarkan *decline curve*, diperkirakan sumur ini akan berhenti berproduksi pada Januari 2025. Penurunan produksi ini disebabkan oleh kerusakan di sekitar lubang bor, khususnya adanya endapan *scale* yang menghambat aliran produksi. Sehingga, diperlukan stimulasi *matrix acidizing* untuk mengembalikan tingkat produksi ke kondisi semula.

Dalam pelaksanaan *matrix acidizing*, digunakan asam HCl dengan konsentrasi 15% untuk melarutkan material *scale* karbonat yang menghambat area di sekitar lubang sumur. Setelah kegiatan stimulasi, perlu dilakukan evaluasi lebih lanjut untuk menilai keberhasilan *matrix acidizing* menggunakan data produksi. Dilakukan perbandingan parameter produksi sebelum dan sesudah *matrix acidizing*. Kemudian untuk meninjau lebih lanjut keberhasilan stimulasi *matrix acidizing*, dilakukan peramalan kemampuan produksi sumur di masa depan menggunakan *decline curve analysis*. Data produksi diolah dengan metode *trial error* dan χ^2 *chi-square test*.

Sebelum stimulasi, laju alir produksi (Q) sebesar 38 BFPD, *Productivity Index* (PI) 0.021 BFPD/Psi, *Flow Efficiency* (FE) 0.04, dan *Skin Factor* +45.79. Setelah dilakukan stimulasi, terjadi perubahan pada produksi sumur SYF-050, yaitu laju alir produksi (Q) meningkat 256 BFPD, PI 0.2 BFPD/Psi, FE 0.7, dan *skin factor* +3.08. kemudian pada *decline curve analysis* dapat dilihat *matrix acidizing* menghasilkan peningkatan masa produksi sumur dengan EUR sebesar 33260 Mbbl, RR sebesar 68993370 Mbbl, dan total masa produksi selama dua tahun.

Kata kunci: *Decline Curve Analysis*, *Flow Efficiency*, Evaluasi, Stimulasi, Skin,

ABSTRACT

EVALUATION OF MATRIX ACIDIZING SUCCESS AND DETERMINATION OF WELL LIFETIME USING DECLINE CURVE ANALYSIS ON WELL SYF-050 NV FIELD

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Well SYF-050 is an oil well that has been producing in the W layer since July 2024 with an OOIP of 69 MMSTB on Talang Akar Formation. In December 2024, the well's production decreased to 32 BOPD. Based on decline curve analysis, it is estimated that this well will stop producing in January 2025. The decline in production was caused by damage around the borehole, particularly scale deposits that impeded production flow. For this reason, matrix acidizing stimulation is required to restore the production rate to its original condition.

In the implementation of matrix acidizing, HCl acid with a concentration of 15% was used to dissolve the carbonate scale material that inhibits the area around the wellbore. After stimulation activities, further evaluation is needed to assess the success of matrix acidizing using production data. A comparison of production parameters before and after matrix acidizing was conducted. Then to further review the success of matrix acidizing stimulation, forecasting of future well production capability using decline curve analysis was conducted. Production data was processed by trial error method and X2 chi-square test.

Prior to stimulation, the production flow rate (Q) was 68 BFPD, Productivity Index (PI) 0.035 BFPD/Psi, Flow Efficiency (FE) 0.286, and Skin Factor +17.92. After stimulation, there was a significant change in the production of the SYF-050 well, namely the production flow rate (Q) increased by 449 BFPD, PI 0.344 BFPD/Psi, FE 1.203, and skin factor -1.21. then on the decline curve analysis it can be seen that matrix acidizing resulted in an increase in the well production period with EUR of 3145 Mbbl, RR of 15717 Mbbl, and a total production period of two years.

Keywords: Decline Curve Analysis, Flow Efficiency, Evaluation, Stimulation, Skin,